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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/429,262	10/29/99	KWEON H	03364.P021

IM52/0329

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EXAMINER	
DOVE, T	
ART UNIT	**PAPER NUMBER**
1745	2

DATE MAILED: 03/29/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/429,262	Kweon et al.
Examiner	**Group Art Unit**
Tracy Dove	1745

☒ Responsive to communication(s) filed on *29 Oct 1999* .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-8* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-8* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Specification

A preliminary examination of this application reveals that it includes terminology which is so different from that which is generally accepted in the art to which this invention pertains that a proper search of the prior art cannot be made regarding certain claim limitations (clms 2 and 6). For example: the specification recites on page 4, lines 4-8, the powder is coated with a metallic alkoxide solution, the metal alkoxide solution is formed by the reaction of an alcohol with an alkali metal. The specification further recites "the alkali metal may be preferably selected from Mg, Al, Co, K, Na, Ca, Si, Ti or Sr", however Mg, Al, Co, Ca, Si, Ti and Sr are not alkali metals. Alkali metals are those metals in Group 1A of the Periodic Table, i.e., lithium, sodium, potassium, rubidium, cesium, and francium. See Hawley's Condensed Chemical Dictionary. The only alkali metals contained in the list are sodium and potassium. Furthermore, the specification states "more, preferably, the alkali metal is selected from Si, Mg, Ti or Al", however none of the metals are alkali metals. It is noted that silicon is a nonmetallic element. See Hawley's Condensed Chemical Dictionary. The only metals which can be properly search are Na and K.

Applicant is required to provide a clarification of these matters or correlation with art-accepted terminology so that a proper comparison with the prior art can be made. Applicant

should be careful not to introduce any new matter into the disclosure (i.e., matter which is not supported by the disclosure as originally filed).

Claim Objections

Claim 2 is objected to because of the following informalities: the phrase "has a thickness *ranged* from 1 to 100 nm" is unclear. Examiner suggests "has a thickness range of 1-100 nm". Appropriate correction is required.

Claim 6 is objected to because of the following informalities: "Mg-alkokxide" should be "Mg-alkoxide". Appropriate correction is required.

Claim 8 is objected to because of the following informalities: the phrase "at temperatures ranged from" is unclear. Examiner suggests "at a temperature range of". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a metal oxide coating containing potassium (K) or sodium (Na), does not reasonably provide enablement for a metal oxide coating containing Mg, Al, Co, Ca, Si, Ti or

Sr. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. The specification recites on page 4, lines 4-8, the powder is coated with a metallic alkoxide solution, the metal alkoxide solution is formed by the reaction of an alcohol with an alkali metal. The specification further recites "the alkali metal may be preferably selected from Mg, Al, Co, K, Na, Ca, Si, Ti or Sr", however Mg, Al, Co, Ca, Si, Ti and Sr are not alkali metals. Alkali metals are those metals in Group 1A of the Periodic Table, i.e., lithium, sodium, potassium, rubidium, cesium, and francium. See Hawley's Condensed Chemical Dictionary. The only alkali metals contained in the list are sodium and potassium. Furthermore, the specification states "more, preferably, the alkali metal is selected from Si, Mg, Ti or Al", however none of the metals are alkali metals. It is noted that silicon is a nonmetallic element. See Hawley's Condensed Chemical Dictionary. Therefore, the specification does not enable an oxide coating of non-alkali metals because the coating is formed by coating the active material powder with a solution containing an alcohol and an alkali metal.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 4, 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "metal component" in claims 2, 4 and 7 is a relative term which renders the claims indefinite. The term "metal component" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear what a "metal component" encompasses. Specifically, claims 2 and 6 state the metal component may be Si, however Si is not a metal.

Claims 2 and 6 cannot be properly search (not enabled). To the extent that claims 1, 3-5, 7 and 8 are understood in view of the objections and rejections to the claims above, note the following prior art rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

Claims 1, 5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang, US 5,783,328.

Wang teaches a method of treating a lithium manganese oxide spinel. The spinel is first coated with an alkali metal hydroxide (metallic alkoxide solution), preferably lithium, sodium or potassium hydroxide, and then heated. See abstract. The lithium hydroxide coated spinel is heated at a temperature between 200-700°C for a period between about 1-20 hours. See col. 5, lin 35-col. 6, lin 5. The alkali metal hydroxide is preferably NaOH or KOH. See col. 3, lin 6-13.

Wang does not explicitly state that the alkali metal hydroxide coating formed is converted into a metallic oxide coating. However, Wang and the instant invention both heat the metal hydroxide coating at the same temperatures for the same time duration. Therefore, the metal hydroxide coating of Wang must inherently form a metal oxide coating on the lithium manganese oxide spinel upon heating. Li_2CO_3 coating (col. 3)

Thus the claims are anticipated.

Claims 1 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Goda et al., US 6,004,695.

Goda teaches a positive electrode active material of Li_AMnO_2 (most preferred). See col. 15, lin 27-54. The surface of the positive electrode active material can be coated with an oxide SiO_2 (col 19)

having a different chemical formula from the positive electrode active material. A metal oxide is preferred. The amount of oxide to be used for the surface treatment is preferably 0.1 to 10% by weight. See col. 19, lin 45-62.

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang, US 5,783,328.

See discussion of Wang above.

Wang does not explicitly state the thickness of the coating layer or the weight percent of the alkali metal contained in the coating.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the skilled artisan would have known that similar processes result in similar products. Since the method of producing the coated active material of Wang and the method of coating the active material of the instant invention are the

same, one of skill would have known that the coated active materials would have similar properties.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Miyasaka 5,882,821 teaches coating a layer containing aluminum oxide on the surface of the positive electrode mixture sheet. See col. 18, lin 9-12.

Komatsu et al. (6,132,639), Von Sacken (5,180,574) and Sakamoto el al. (6,153,334) teach a positive electrode active material including a surface layer of an electrically conductive metal oxide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached *Monday-Thursday from 8:00 AM - 6:30 PM.* My supervisor is Gabrielle Brouillette, who can be reached at (703) 308-0756. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax number is (703) 305-3599.

March 23, 2001

GABRIELLE BROUILLETTE
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